Wildlife observations at the Olentangy River Wetland Research Park in 1998

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Introduction

The abundance and diversity of the wildlife community in a created wetland can be used as an indicator for the progress of overall ecosystem development. Following the principle of ecosystem self-organization, created wetland wildlife communities should reflect the development of suitable habitat as the hydrology, soil regime, and plant community progress.

This paper summarizes wildlife observations during the first five years after construction of the experimental wetland basins at the Olentangy River Wetland Research Park.

Methods

General ecological observations have been made by students and staff at the site since the construction of the two experimental basins in 1994. Most of these observations have been made during the twice-a-day sampling effort, and are therefore limited to areas visible from sampling locations. Observations include direct field sightings and indirect indicators (nests, tracks, burrows, etc.). Because of their proximity, comparison between the two basins was difficult. The five-year summary is a compilation of this 1998 survey and previous surveys (Svengsouk et al., 1997; Bouchard and Harter, 1998).

Results and Discussion

A total of 99 faunal species were observed at the Olentangy River Wetland Research Park between 1994

Table 1. List of bird species identified by students and faculty within the Olentangy River Wetland Research Park. Data collected between May 1994 and October 1996 (Svengsouk et al., 1997), January and December 1997 (Bouchard and Harter, 1998), and January and December 1998 (this study). Wetland species are indicated in bold.

Species (common names)	1994*	1995	1996*	1997	1998
American coot		**x**	**x**	**x**	**x**
American crow		x	x	x	x
American goldfinch			x	x	x
American kestrel	x	x	x	x	x
American robin	x	x	x	x	x
American wigeon		**x**			
barn swallow	**x**	**x**	**x**	**x**	**x**
barred owl	x				
belted kingfisher	**x**	**x**	**x**	**x**	**x**
black-crowned night heron	**x**				
blue jay	x	x	x	x	x
blue-winged teal	**x**	**x**			**x**
brown thrasher			x		x
brown-headed cowbird		x	x	x	x
Canada goose	**x**	**x**	**x**	**x**	**x**
carolina chickadee					x
chimney swift			x		x
cliff swallow					x
common grackle					x
common nighthawk			x		
common snipe	**x**				
Cooper's hawk	x				x
downy woodpecker		x	x	x	x
eastern kingbird	x		x	x	x
eastern phoebe					x
epidonax flycatcher sp.			x		

European starling					x
gray catbird			x	x	x
great blue heron	**x**	**x**	**x**	**x**	**x**
great egret		**x**		**x**	
great horned owl	x				
green-backed heron	**x**		**x**	**x**	
hawk spp.					x
herring gull	**x**				
hooded warbler					x
house finch			x		x
house sparrow		x	x	x	x
house wren	x	x	x	x	x
indigo bunting	x				
killdeer	**x**	**x**	**x**	**x**	**x**
king rail					**x**
least bittern					**x**
least sandpiper	**x**				
lesser scaup		**x**			
lesser yellowlegs	**x**				
mallard	**x**	**x**	**x**	**x**	**x**
mourning dove		x	x	x	x
northern cardinal	x	x	x	x	x
northern flicker		x	x	x	x
northern junco	x	x	x	x	x
northern mockingbird			x	x	x
northern oriole	x		x	x	
osprey					x
pine warbler			x	x	
purple martin					x
rail spp.					x
red-bellied woodpecker			x	x	
red-head woodpecker				x	
red-headed merganser		**x**			
red-tailed hawk	x	x	x	x	x
red-winged blackbird	**x**	**x**	**x**	**x**	**x**
ring-billed gull	**x**	**x**	**x**	**x**	**x**
rock dove					x
rough-winged swallow	x	x	x	x	
sandpiper spp.					**x**
sedge wren			x		x
short eared owl		x			
slate colored juncos					x
solitary sandpiper	**x**				
song sparrow		x	x	x	x
swamp sparrow					x
spotted sandpiper	**x**	**x**	**x**	**x**	
tree swallow	**x**	**x**			**x**
tufted titmouse					x
turkey vulture		x	x		
Virginia rail		**x**			
warbler sp.		x	x	x	
warbling vireo					x
white breasted nuthatch			x	x	
wood duck	**x**	**x**	**x**	**x**	**x**
Total species**	33	36	43	39	50
Total aquatic species	17	16	11	12	15
Wetland sp. in common / previous year		10	10	11	10
Wetland sp. new / last year		6	1	1	4
Wetland sp. lost / last year		7	6	0	3

* Less than one year of data

** does not count birds identified by sp. or spp.

and 1998 (Table 1 and 2). Included in these species were 76 birds, 14 mammals, 5 reptiles, and 4 amphibians.

Birds

The majority of the 50 birds species observed at the site are considered upland species. These species probably rely primarily on the surrounding old field and bottomland hardwood forest habitats.

Since construction of the experimental wetland basins, 27 aquatic bird species have been observed at the site (Table 1). However, fewer than 18 aquatic species have been observed in any one year. Nine species have been commonly observed in the wetlands during each of the five years (Table 3). Many of these common species have used the wetlands as breeding ground, including mallards, killdeer, and for the first time in 1998, Canada geese (Fig. 1). Two species, the American coot and spotted sandpiper, have been observed in four of the five years. Of the remaining aquatic bird species, four species have been observed sporadically in two or three of the five years, and 12 species have been observed in only one year.

Bird community development has been slow over the last five years of observation. The most commonly observed birds at the site (mallards, red-winged blackbirds, Canada geese) became established soon after construction and have consistently been observed each year. The colonization and establishment of new species after 1994 have been low. In

Table 2. List of mammal reptile, and amphibian species identified by students and faculty within the Olentangy River Wetland Research Park. Data collected between May 1994 and October 1996 (Svengsouk et al., 1997), January and December 1997 (Bouchard and Harter, 1998), and January and December 1998 (this study).

Species	1994	1995	1996	1997	1998
mammals					
beaver	-	x	-	-	x
white-tailed deer	-	x	x	-	-
eastern cottontail	x	x	x	x	x
eastern gray squirrel	-	-	x	x	-
deer mouse	-	x	-	-	-
field mouse	-	-	x	x	-
groundhog	x	x	x	x	x
mink	-	-	x	x	-
muskrat	x	x	x	x	x
rabbit	-	-	-	-	x
raccoon	x	x	x	x	x
red fox	x	-	-	x	-
red squirrel	-	-	x	x	-
meadow vole	x	-	x	x	-
Total	6	7	10	10	5
reptiles					
garter snake	x	x	-	-	-
northern water snake	x	x	x	x	-
painted turtle	x	x	x	x	x
snake (unidentified)	-	x	-	-	x
snapping turtle	x	-	x	-	x
spiny soft-shelled turtle	x	x	-	x	-
Total	5	5	3	3	3
amphibians					
American toad	x	x	x	x	-
bullfrog	x	x	x	x	x
green frog	-	x	x	x	-
leopard frog	-	x	x	x	-
unidentified frogs	-	-	-	-	x
Total	2	4	4	4	1
other					
crayfish	-	x	x	-	-
Total	**13**	**17**	**18**	**17**	**9**

Table 3. Annual observance frequency of aquatic bird species at the ORW from May 1994 to December 1998.

Infrequent	Sporadic	Frequent	Common
American widgeon	blue-winged teal	American coot	barn swallow
black-crowned night heron	great egret	spotted sandpiper	belted kingfisher
common snipe	green-backed heron		Canada goose*
herring gull	tree swallow		great blue heron
king rail			killdeer*
least bittern			mallard*
least sandpiper			red-winged blackbird
lesser scaup			ring-billed gull
lesser yellowlegs			wood duck
red-headed merganser			
solitary sandpiper			
Virginia rail			

Infrequent= observed 1 year, Sporadic= 2 or 3 yr, Frequent= 4 yr, Common= 5 yr
*observed using wetlands as breeding ground

Figure 1. Photograph of a Canada goose nesting on top of a muskrat hut in Wetland 1. One nest was located in each basin for the first time in 1998.

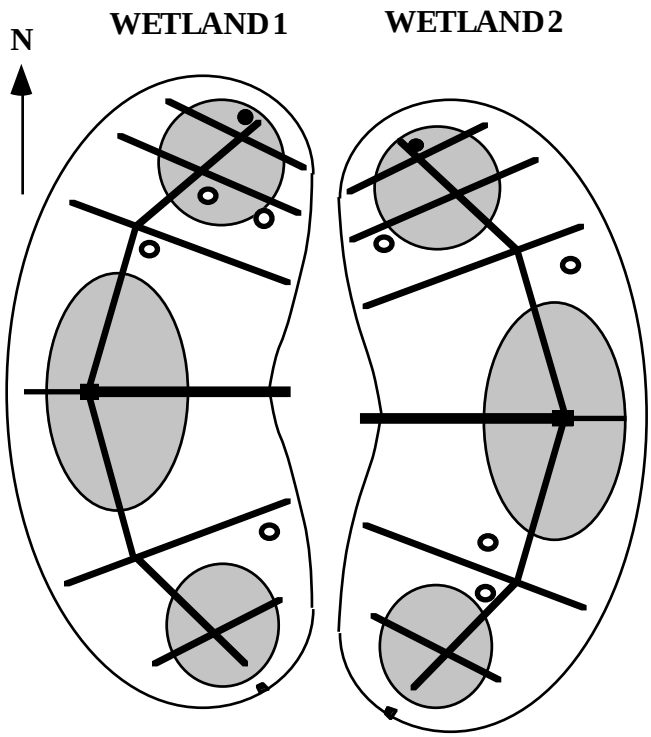

Figure 2. Location of muskrat huts in the two experimental basins in winter 1998. See Bouchard and Harter (1998) for locations of huts in previous years.

1998 a total of only 15 aquatic species were observed in the wetlands. A comparison of the number of species gained or lost over the previous year after 1994 shows that a net gain in species richness occurred only in 1997 and 1998, with a net gain of only one species in each of these years (Table 1).

Mammals

Eastern cottontail, groundhog, muskrat, and raccoon have been the most commonly observed mammal species since construction of the two experimental wetlands (Table 2). Of these, the cottontail and groundhog have been observed mostly in the old field habitats surrounding the wetlands. Raccoons have been consistently observed feeding within the wetland basins.

Although muskrats have been observed at the site since 1994, muskrat huts within the wetland basins first appeared in 1996. In each year since 1996, several muskrat lodges have been constructed in each of the two wetlands (Table 4). In 1998, four muskrat lodges were actively maintained in each basin (Figure 2). Since no more than four lodges per basin have been constructed in any year, the wetlands may have already reached their carrying capacity for muskrats.

Even though a beaver was observed at the ORW in 1995, 1998 was the first year that beaver activity became prominent. A single beaver was first observed in Wetland 1 on May 22, 1998 (Fig. 3). Soon after its appearance the beaver began to block the outflow of Wetland 1 with vegetation. Because of the possible effects on the hydrology and overall experimental design of the wetlands, a management decision was made to daily remove the vegetation placed by the beaver. The beaver subsequently abandoned the site after June 24, 1998, most likely due to its ineffectiveness in damming the wetland outflow.

Table 4. Number of active muskrat huts found in Wetlands 1 and 2 of the ORW from 1994 to 1998

Year	Wetland1	Wetland 2
1994	0	0
1995	0	0
1996	4	3
1997	4	2
1998	4	4

Reptiles and Amphibians

Reptiles and amphibians have been observed less frequently than birds and mammals, probably because of lower visibility to observers. Painted turtles are the only species that have been observed in all five years, but northern water snakes, American toads, and bullfrogs have also been frequently noted (Table 2). More detailed surveys of amphibians are given by Cochran (1998) and Cochran and Hensler (1999).

Acknowledgments

This report is made possible by all those (students, staff,

Figure 3. Photograph of the beaver that resided in the experimental wetlands, May-June 1998.

and faculty) who participate in research activities and especially in the two-per-day monitoring at the Olentangy River Wetland Research Park.

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